

Master Plan Policy Paper #3: The Use of Electronic Technology in Delivering Postsecondary Education

April 1999

ISSUE AREA

The use of electronic technologies to deliver postsecondary education.

POLICY ISSUE

Can electronic learning (E-learning) technologies enhance access to postsecondary education in Washington State?

STUDY QUESTIONS

- What are the dominant E-learning technologies and how are they used?
- What differentiates distance learning from other uses of E-learning technologies?
- Does E-learning affect the quality of the learning experience?
- How are E-learning technologies affecting higher education culture?
- Can E-learning provide Washington's citizens with more access to education?
- What are the policy implications of enhancing E-learning opportunities?

INTRODUCTION

This paper is intended to provide an overview of E-learning technologies in higher education to determine how they can be used to enhance access to higher education in our state. To address the question, the paper defines and explains the primary technologies that are in use. It discusses the cultural changes and effects of these new instructional delivery systems on students, faculty, and institutions, and then suggests some arenas where policy initiatives could address obstacles and assist their development.

HOW TECHNOLOGY IS CREATING A NEW LEARNING ENVIRONMENT

Computers, telecommunications, and the Internet are changing the way schools do business. Advanced media and technologies offer today's colleges a rich mix of learning tools for use both inside and outside the classroom. These tools support the recent research on diverse learning styles that has changed our idea of "best practice" in teaching.

A campus-based instructional model was once the most efficient way for students and faculty to gain access to education resources. The interaction among students, faculty, the library, campus, laboratory facilities, and administration framed our idea of what constitutes higher education. Electronic technology has decentralized many of these resources, putting them within reach of faculty and students with the necessary skills and motivation to access them. Students no longer need come to a centralized physical facility to interact with many education resources and processes, or even to interact with faculty and peers.

Most people still think of college as lectures, books, and papers, but technology has already begun to alter that thousand-year-old paradigm. Only a few years ago, overhead transparencies were the dominant instructional media. Video, computers and the Internet are quickly overtaking them. The hardware, software, and delivery systems we use are changing and converging so very quickly that any description can only be a snapshot in time. Today's college students can review their syllabi on Web pages, visualize complex processes with computer graphics, and practice skills through games and simulations. Students communicate via e-mail and use the World Wide Web for research. On campus, they are introduced to state-of-the-art resources specific to their fields of study.

Some people view electronic information technologies as a "technological fix" for a host of problems from enrollment demand to remediation. But E-learning technologies are *tools* for instruction. Electronic courseware that is well designed and used with care *can* enhance student learning. Poorly designed courseware is, predictably, less effective. The same is true for traditionally designed and delivered courses. Best practice in instructional design, whether electronic or traditional means choosing the medium best suited for the characteristics and location of the learner, the course content and course objectives. Television is different from the Internet; two-way interactive video (ITV) is different from computer-based instruction. All of the new course delivery options require significant investments of time, energy, training, and money for implementation.

Just as the availability of textbooks does not eliminate the need for teachers, neither does the proliferation of learning content on video or the Web eliminate the need for faculty, formal courses of study, or organized learning activities. Regardless of instructional media — books, overheads, video, or CD ROM — high-quality education requires thoughtful planning and design, engaged learners, and faculty who have the training, the time, and the motivation to engage the latest delivery strategies to enhance student learning.

E-learning Technologies and Their Application

In order to understand the impact of E-learning, we need to identify the key learning technologies, then understand how they are being applied to postsecondary instruction. Categories of E-learning can be established in any of the following ways:

- by a particular *kind* of hardware or delivery system such as computers or video;
- by the *locus* of instruction -- onsite or offsite; or
- by defining whether the students and faculty meet and work at the same time, generally referred to as “synchronous” (at the same time), or “asynchronous”, (anytime, anywhere instruction).

The following is a summary of the dominant E-learning technologies in use in Washington State today. (*Please refer to Appendix A for more detailed descriptions.*)

► Teleconference Technologies

Interactive Television (ITV) courses are characterized by their ability to provide two-way interactive “live” instruction telecast to outlying sites where students participate in the class through cameras and microphones in specially designed and designated classrooms. ITV courses are distributed throughout Washington State schools via the K-20 network.

Satellite Teleclasses generally provide information via one-way video (from a studio) and two-way audio (via telephone). Satellite teleclasses are used primarily for ‘just-in-time’ training that requires wide dissemination.

► Pre-Recorded Materials

Telecourses are complete instructional systems that rely on video for their primary delivery, supplemented by textbooks, study guides, and other materials.

Computer Based Training (CBT) generally denotes computer-based learning packages that do not rely on telecommunicated transmissions for delivery. Most frequently, the student utilizes CBT packages alone or in computer labs. The content is distributed on digital storage media such as diskette, CD-ROM, or Digital Video Disks (DVD).

► Internet and Online

Online courses are delivered over the Internet, using computer communications to link faculty and students. Internet classes vary in technical sophistication, and may incorporate e-mail, listservs, resources and courseware on the World Wide Web, or specialized course-management software.

Defining Common Terms for the Purpose of the Master Plan

⚡ *At WSU Vancouver, students take courses through two-way interactive video from teachers based at WSU/Pullman. Sometimes the instructors teach from Vancouver and the students in Pullman become the remote site. Course materials are sent via courier or fax and distributed by site facilitators.*

⚡ *Through a consortium called Washington Online, community college students sign up for courses through their local college, but their teacher might be employed at any Washington community college. All of the course interactions take place through computers. A team of faculty creates the course to assure that it meets statewide standards for the subject.*

⚡ *A student in Friday Harbor visits her local library to view a tape from a telecourse series supplied by Skagit Valley College. After viewing the materials and reading the textbook, she completes an assignment and sends it to the mainland for grading and feedback.*

► Distance E-learning

There are many ways to apply the term “distance learning.” One of the earliest applications was correspondence study, popularized at the turn of the century.

Distance learning at its most basic level, takes place when teachers and students are separated by physical distance for most of the instructional delivery. For the purposes of the master plan, the term “distance learning” course or program should only be used if:

- Teachers and students are separated for at least 75 percent of the contact hours;
- The content has been specifically designed as a course of study to increase and assess student knowledge or skills; and
- An education institution provides the course content and is responsible for assessment of student achievement through credits, certification, or degrees.¹

For the purpose of this paper, we will focus on E-learning technologies used to deliver instruction by a body authorized to grant credentials. This definition distinguishes more formal instruction from independent E-learning for personal development. In other words, a student may be able to use a search engine to find information on the World Wide Web, buy an

¹ This definition excludes site-based instruction offered in-person using facilities other than those on a main campus. For the purposes of the master planning process, that should be identified as site-based external delivery.

educational CD-ROM, or register for a commercial online training package. However, if the student wants credentials for the learning, they will need to engage in a course of study that likely includes reading about it, writing and synthesizing their learning, participating in some dialogue with fellow students, and/or performing some activity that establishes their competence in the subject. Institutions offering programs or degrees via distance will be expected to meet quality standards such as those articulated by the Western Cooperative for Educational Telecommunications. (See *Appendix B*)

It is important to recognize that the term “distance” in this case does not necessarily imply great geographical separation. Campus-based students often take distance classes to supplement on-campus courses, fill in prerequisites, or accommodate complicated schedules. “Distance” education can take place with the faculty and student separated by many miles or just a few blocks. Data from the University of Washington Extension shows that 30 percent of their distant learners are matriculating students. Washington Online’s statistics show that 50 percent of their students are also enrolled in on-campus classes.²

► Multi-modal or “Distributed” Instruction

There are many ways to apply, combine, and use E-learning technologies for education. For the purpose of planning, it will be useful to distinguish these applications from ‘pure’ distance learning where the teacher and student are seldom physically together.

Multi-modal and distributed instructional systems are fast becoming the dominant approaches to instructional delivery, because they take advantage of the best aspects of both in-person and E-learning. While pure (100-percent) distance learning remains controversial among some in higher education, multi-modal E-learning is being applied in the service of all kinds of instruction inside and outside the classroom. Computers, Internet, video, the World Wide Web, and interactive video are all available as learning tools.

Multi-modal or distributed instruction means the information is delivered, and learning takes place through the use of several technologies. The term *distributed education* is often used when communications technologies supplement class time to expand classroom resources or facilitate convenience scheduling. This can be as simple as a faculty member placing a syllabus on the Web.

² These statistics may reflect the audience to whom the courses have been marketed so far. Additional marketing and recruitment strategies might be designed to encourage other audiences.

Examples of multi-modal instruction:

⚡ At the University of Washington, lectures in computer programming have been converted to CD-ROM and World Wide Web pages. Students can view the content live in the lecture hall or watch it on cable TV. Later, students can view it on their computers through the Web, simultaneously watching the instructor at the podium, and reviewing the print materials (via Power Point slides). As students pursue their assignments they can e-mail or “dial up” a tutor. The tutor can answer questions by phone or actually take over the student’s work on the computer via “NetMeeting,” and correct the work.

⚡ At Seattle Central Community College in a “tutored lecture” environment, students use course materials prepared by the UW. They watch the materials with a tutor/facilitator. Every four minutes there must be either a question/answer in the recorded materials, or a question from the classroom. Otherwise the tutor is required to stop the playback and raise a question for student discussion. This class takes place on campus, and since the class materials are prepared at the UW, the student is assured the course credits can be applied to UW computer science degree requirements.

⚡ At North Seattle Community College, students of biology attend class in the “Cities” classroom where media technology and class activities are intricately interwoven. Instructors use sophisticated graphics and simulations available from CD-ROMs or the Internet, and students can use workstations spaced along the perimeter of the room to follow up, perform experiments, or do research.

⚡ The University of Washington offers an MSW program at Peninsula Community College to a ‘cohort’ of social workers. The students meet for intensive weekend activities, aided by a facilitator who works on-site full time to organize the program. The program faculty teach full time at the UW main campus. By conducting some of the classes via two-way video from Seattle, they can serve both on- and off-campus learners.

⚡ At the Evergreen State College, a group of students study management, also taking classes on weekends. The additional interactions needed to process and explore the class content are accomplished on-line through e-mail and electronic conferencing. Students submit papers to instructors as e-mail file attachments.

How Does E-learning Affect Instructional Quality?

Any time courses are rewritten, a fresh start provides an opportunity to reconsider how content has been presented in the past and to rethink how to enable the learning process. Similarly, when

curriculum is rethought and converted for E-learning technologies, the new approach and new beginning offers the opportunity for new learning strategies. However, the preparation of E-learning materials requires significantly more attention to instructional design and implementation than the development of traditional classroom instruction.

Curriculum design is key to the success of E-learning technology. Training faculty for E-learning is more about revising curriculum and instruction than about the mechanics of a particular technology. Course conversion requires a focus on learning objectives and finding the ideal way to achieve them. Often, when a team approach is applied to electronic course development, the result can bring more knowledge and perspective to the process of course creation. A typical team could include one or more content specialists, an instructional designer, software programmer, media producer, and computer network specialist.

No matter how well designed E-learning curriculum may be, some still believe that in-person instruction is intrinsically superior to distance learning or multi-modal instruction. Clearly, that is not the case. A lecture course delivered without inspiration or imagination to a large student audience does not necessarily constitute a “quality” learning environment, although it may well be a person-to-person mode of delivery. Conversely, “screen time” that invites interaction through e-mail exchanges, listservs, chat rooms, and other interactive features may engage students deeply in the learning, and thereby enhance it. In short, no one method automatically precludes a quality learning experience.

Similarly, E-learning does not automatically imply a lack of student-to-faculty contact. In fact, it may result in *greater* student-to-faculty communication, as well as greater communication among students. Instructors who have taught online uniformly state that such instruction enables and requires far more one-on-one interaction than occurs in the classroom.

Many studies have attempted to determine whether E-learning is or can be qualitatively comparable to face-to-face instruction. Supporters will quote the “no significant difference” findings documented by Thomas Russell of North Carolina State University. Russell has posted a page on the World Wide Web that chronicles 248 studies that found no significant differences between technology-based instruction and traditional classroom instruction.³

In fact, because uncertainty is so high about the effect of moving learning out of the classroom, distance instruction is generally held to a *higher* assessment standard than most classroom instruction. For example, many schools require all distance learning courses to be reevaluated by their curriculum committees even if the course content is exactly the same as the on-campus class.

In summary, although some disciplines or course content may be more easily adapted to E-learning technologies, the manner in which E-learning affects the quality of instruction will depend largely on the degree to which the technologies enable students to become actively engaged in the learning.

³ Available at <http://teleeducation.nb.ca/nosignificantdifference/>

HOW E-LEARNING IS CHANGING THE CULTURE OF HIGHER EDUCATION

⌘ *No professionals in history have been asked en masse to change what they're doing in the middle of their professional lifespan. We've never before in history seen an abyss of change that is this deep and this broad.*

Jennifer James: Thinking in the Future Tense

⌘ *If change is indicated, and one does not change, one is bound to go in the direction one is headed.*

Chinese Proverb

How E-learning is Transforming Traditional Ideas About Higher Education

E-learning, with its ability to serve new learners, eliminates geographic barriers, provides instruction at the convenience of the student, and transforms traditional ideas about student-faculty relationships, faculty load, and institutional autonomy. Enabling E-learning means policy makers must revisit all the formulas by which we organize and operate our systems and individual institutions — many of which are driven by traditions and power structures developed under a thousand year-old paradigm.

A student-centered, reach-anywhere approach to education means new cooperation among higher education institutions as they compete in the marketplace with schools from around the country and the globe. Rather than duplicating courses and programs, the colleges will need to find niches and specializations. Armed with E-learning technologies, and a mandate to reach out, they will be driven to create consortia and share resources. To accomplish these goals, institutions will have to resolve operational differences such as academic calendars, regional variations in faculty and staff compensation, and grading policies. More important, shared program delivery will mean coming to agreement on core values and outcomes in subject and content areas.

The Challenges to Traditional Administration, Support and Management

Reforming systems to support E-learning is a challenge that affects all educational management systems and formulas. E-learning, with its different infrastructure and support systems, demands new models for operations, for faculty and staff training and support, and alternative funding formulas.

E-learning, with its capacity for flexibility and just-in-time learning, challenges assumptions about the academic calendar, space planning, and scheduling that are as old as the Academy

itself. Even the traditional week-long calendar can take on a new look with “24 by 7” operations: processes and programs available to learners 24 hours per day, 7 days per week. Telecommunications challenge the ages-old axioms about seat-time and all that public policy has attached to that unit: contact hours, credit hours, degrees, and FTEs, to name a few.

As students, faculty, and administrators face challenges to tradition and existing policies, they will need help in making prudent responses that put learning first. Up to now, support has come mostly from external sources, such as industry and foundation grants. This year, the Fund for the Improvement of Postsecondary Education (FIPSE) is awarding grants for “Learn Anywhere, Anytime Partnerships” (LAAP). Accreditation agencies are also reviewing and adjusting their techniques and methods of assessment.

Program Design for E-learning

E-learning changes the formulas by which education is constructed. Start-up costs for new courses and programs are higher because the programs generally must be completely designed and produced in advance. In traditionally delivered programs, “course design” involves research on the subject material to be covered, the development of syllabi and lectures, and other tasks, shaping an E-learning course takes faculty into an entirely different arena.

In addition to curriculum design, there is graphic design, copyright clearance, and attention to intellectual property rights. Shared course delivery means coming to agreement on core values in subject and content areas. Faculty must choose the medium or combination of media best suited for the characteristics and location of the learner, the course content, and course objectives. Television is different from the Internet; two-way interactive video (ITV) is different from computer-based instruction.

All of the new course delivery options require significant investments of time, energy, training, and money for implementation. Technical support becomes a high-cost, constantly evolving area, including human resources, technical infrastructure, training, troubleshooting, maintenance, and upgrading of hardware and software.

E-learning also is likely to cause us to rethink personnel systems and flow charts. Already, many institutions have consolidated audio-visual, information, and library services. Institutions need new job descriptions for people with skills that incorporate computing, network management, instructional design, and media production.

Support for E-learning technologies will mean keeping up with a moving target. In 1994, the leading technology for distance education was videotape. By 1996, most institutions delivered distance education using two-way interactive television. In 1999 the Internet is the “hot” technology. And by 2006, all television as we know it will be converted to a new digital standard.

The point is, change is happening so fast that it is impossible to predict what lies around the corner. The public sector can’t afford to take the same risks as the private sector. It will be

important to plan flexible, adaptive systems and that allow public higher education to keep up with changes in the way we learn and work.

How E-learning Challenges Traditional Faculty Roles, Rewards and Expectations

Faculty care about ensuring the quality of instruction, working conditions, and intellectual property. They work hard to stay on top of their own fields while incorporating new technologies into their teaching. E-learning in general, and distance learning in particular, inspires both great uncertainty and high expectations, but if faculty think E-learning is threatening their way of life and unreasonably contributing to an already high workload, then they have few incentives to embrace E-learning and the redesign of courses and programs.

In the campus-based academic tradition, teaching has been a “cottage industry,” where instructors personally crafted each of their classes. E-learning courses are now professionally designed and include detailed lesson plans, interactive lessons, pre-tested student exercises, answers to frequently asked questions, corrections for common misconceptions, and student discussion questions. Teaching through technology means the faculty member, once liege of the classroom, is likely to be a team player. Team-based course-development limits instructor control of intellectual property.

Faculty have always enjoyed significant control over the courses they chose to offer, the information and values imparted in the courses, how students would be assessed at the end of a course, and even over their teaching schedules. Departments still control most program content, and determine course and program competencies. Team teaching, interdisciplinary course development and new consortially delivered courses mean less control for the faculty of any one department or institution. In short, the realities of e-learning are a significant change to current models of faculty autonomy and control.

Even with their concerns about adding distance instruction to their own traditional load, full-time faculty are also concerned when pre-prepared courses are routinely assigned to part-time instructors. Part-time teachers are less likely to be able to help students through the maze of academic cultural and logistical issues. Part-timers often have limited access to equipment; they may work from home or in cramped offices shared by many others. Most receive no training compensation; they have less loyalty to the institution, and often are not in the community communications loop.

Perhaps most important is the lack of incentives for college teachers to focus their attention on delivery of instruction. In industry, new hires and promotions are determined by measuring the person against a skill standard. However, in research institutions, faculty promotions and incentives are still based upon research and publication. In most institutions, implementing e-learning requires faculty to divert their energy from those activities linked to compensation. Efforts to develop and incorporate new techniques and strategies bring them no reward in tenure or pay.

Change is hard. Many educators believe that physical presence is a requirement for learning. Transforming traditionally delivered programs and courses into formats compatible with E-

learning requires that faculty understand the new models, and have the resources needed to engage them. This requires training, practice, technical support, and time.

How E-learning is Affecting Student Behavior and Expectations

Many students entering college in 2005 will come to campus — virtual or otherwise — with different expectations and abilities than students of ten or 20 years ago. They will have grown up with a computer at home and at school. For them, the Internet and World Wide Web will be as familiar as card catalogues and *The Reader's Guide to Periodical Literature* were to a different generation. They will be accustomed to finding information on the World Wide Web; many will be skilled in computer applications. They will have developed their kinetic responses by playing video games and surfing the Internet for play or schoolwork. They will be used to getting information at their fingertips — immediately and on demand.

E-learning means students can be better consumers, if they know how to shop. Students who understand technology can use it to match their own learning styles and abilities. If they understand how the system works, they can earn their undergraduate degree by completing a degree from a single institution, accumulating credits from several institutions, or proving their competencies. Qualified students will be able to complete their college degrees by taking courses from alternate providers, during the summer, or on overload.

E-learning students will get information on courses, programs, and their own academic progress whenever they want it. Online and distance courseware will provide educational options for the time- and place-bound whether in urban centers or rural communities. Multi-modal and distributed learning will allow students to minimize their trips to campus or classroom and help schools organize programs to fit the needs of working adults.

The potential for E-learning is vast, but there is much work to do.

Student Services on a Virtual Campus

Good distance learning programs offer coordinated services and dedicated personnel to help students navigate education systems. Many students who rarely or never go to a campus need specialized support systems and points of contact where they can find the information and human resources they would have formerly found on campus:

- **Program advising:** (What should I take? From whom should I take it? What programs and degrees are available to meet my interests and career goals?); and
- **Prior learning assessment:** (Do I have the skills and competencies to pursue a particular path? Will my courses transfer between institutions and their degree requirements?)

If institutions do not organize to support the E-learner, he or she will have to spend an enormous amount of time trying to negotiate processes such as admissions, registration, financial aid advising, computer connections, and library support.

- **Financial aid information:** Financial aid itself is a significant issue for E-learners. Financial aid award systems revolve around traditional time-based standards — seat time, credit hours, and clock hours — which may be irrelevant to E-learners. Unless an educational program or a student's enrollment pattern can be configured to fit the traditional model, it is difficult, if not impossible, to award state or federal student financial aid. This year, in recognition of this obstacle, the Department of Education is funding demonstration projects to experiment with federal aid for E-learners.
- **Program availability and compatibility:** E-learning students need to understand the extent to which a desired course or program can be accomplished at a distance. Some courses may require laboratories, exams, or face-to-face sessions. Each school has some residency requirements setting the number of credits they must take to receive a degree from a particular institution. Not all courses are available every quarter or semester.
- **Resource availability and facility:** E-learning students need specialized skills and specialized tools. One of E-learning's great misconceptions is that E-learning is done alone. Rather, E-learning takes a high degree of facility with computing tools and consistent Internet access because, *far more than in the ordinary classroom, student-to-student interaction and active participation are a required condition of performance.*

There are significant differences in resources available throughout the state. Students on the I-5 corridor have a significant advantage over rural students in the Internet services and speeds available to them, and the cost for distance courses can vary with the availability of telecommunications resources. Several institutions have developed their distance education through self-support units. This means comparable classes offered via distance are more expensive than those in the classroom.

Clearly, the promise of E-learning is a student-centered learning environment, in which students have greater control of the pace and the immediacy of courses, research, and campus information. But the legacies of traditional time-based, campus-based systems will have to be altered, and the technology itself made more available before the advantages of E-learning can truly be realized.

CAN E-LEARNING PROVIDE WASHINGTON'S CITIZENS WITH MORE ACCESS TO EDUCATION?

Instruction through telecommunications technologies offers new pathways for access to education. By combining the use of E-learning technologies and sound educational practices, technology can be used to bring courses to place-bound individuals, help students achieve their academic goals efficiently, and provide training and enrichment for lifelong learners.

Using telecommunications technologies is not an inexpensive proposition for the state, the student or the institutions. With cultural and policy changes institutions may be able to find economies of scale. But additional investment will be needed for expanding and maintaining E-

learning facilities and operations, as well as for faculty training and technical support. *Technology will not necessarily generate significant overall cost reductions or savings*, but it will make education more available and accessible for learners, if given the resources to set up self-sustaining systems.

Which Applications Work Best for Whom?

Distance education is not for everyone. It can meet specific needs of specialized audiences when matched with specific types of learners and specific kinds of content. Electronic delivery works better access for some subjects than others. Certain disciplines or course content may lend themselves more easily to E-learning technologies.⁴

Distance learners have a different demographic profile than campus-based students. Generally, they are older working adults, mostly female, who must earn their degrees along with other responsibilities, usually work and family. Most students who enroll in distance education courses are over 25 years old, employed, and have previous college experience.⁵

Off-campus distance learners take fewer credits per quarter, and prefer programs that provide open, compressed, or accelerated learning opportunities, such as open enrollment (start anytime) or weekend “intensives,” courses that pack the maximum amount of coursework into a few weekends, instead of an entire semester or quarter. Many prefer the “asynchronous” instructional options that do not require attendance at a particular place or time.

Students who take courses that are delivered *totally* via distance (e.g. they never go to a campus) must be clear about their educational goals and already know how to learn. If they are taking online courses, they must have computer skills and access to the computers, software, and connectivity required to handle the course materials. They need the discipline to establish a regular study schedule, and sufficient motivation to complete the course or program on their own. Most reputable purveyors of *online* instruction provide some sort of student intake or self-assessment to determine whether potential students are good candidates for this kind of instruction.

Distance learning via *ITV* is somewhat different because the format of instruction mirrors the traditional classroom. Though away from the home campus, the class meets at a set time and requires a specially designed location. ITV is more often used to bring teachers to off-campus sites. In Washington State, the Washington Higher Education Telecommunications System (WHETS) network has brought instruction to such places as Yakima, Vancouver, and Spokane.

Distance learning can be used to provide access for students in rural areas. Many distance learners are only looking for a skill set or credential and do not seek the traditional campus experience, replete with homecoming games, the student union building, and dorm life.

⁴ In general, areas of current representation or scholarship are most likely to have internet based resources while historical subjects and ancient texts are less likely to have been translated to electronic form. Also, courses with extensive laboratory, clinical or mechanical requirements are more difficult to deliver at a distance.

⁵ “Who is learning at a Distance?” from Peterson’s Web site <http://www.petersons.com/dlearn/who.html>

However, some distance learners who do seek an education comparable to a traditional college experience will not get it unless provided equivalent services and resources.

A campus environment provides “in-person” student services — technical help for computing questions, library resources geared to academic research (different from the focus of community libraries), specialized laboratories and tools. And a traditional campus includes people to help with the personal side of getting through college such as scholarships, financial aid, and domestic issues. These systems will need to be rethought and revised to serve learners who do not come to campus. They will need to be centered on the needs of students rather than the operations of a physical plant. This means a “24x7” (24 hours a day, seven days a week) approach to scheduling facilities, faculty and staff support – a significant changes in the way colleges do business.

APPENDIX A

Distance Learning Technologies

► Print

Correspondence courses are individualized, self-paced studies, traditionally print based and conducted by mail. Correspondence courses are still very popular and are frequently supplemented by e-mail and telephone interactions between instructor and student. Correspondence courses allow students to complete course work at home on a self-paced schedule.

► Teleconference Technologies

Interactive Television (ITV) courses are characterized by their ability to provide two way interactive 'live' instruction telecast to outlying sites where students participate in the class through cameras and microphones in specially designed and designated classrooms. Interactive television courses are distributed throughout Washington State schools via the K-20 network, which links schools and government agencies throughout the state. Both the University of Washington and Washington State University offer upper division courses on community college campuses using interactive video. This allows geographically dispersed students to attend the same 'live' classes. Course materials are prepared and sent in advance or faxed to remote student groups. Occasionally the instructor will travel between sites.

While on the surface ITV classes seem cost effective, practitioners know that they require a higher degree of faculty preparation than the classroom. "Talking heads" are deadly and ineffective in this medium and faculty must be trained in active learning techniques and remote site class management. In addition, support is needed at each remote site for movement and management of course materials and to facilitate physical (doors, locks, hours, scheduling etc.), technical (connection, camera switching, troubleshooting, microphone placement, room configuration, etc.) and student (books and materials, advising, library) support.

Satellite Teleclasses generally provide information via one way video and two way audio. Used primarily for 'just in time' training that requires wide dissemination, satellite teleconferencing enables broad dissemination of materials rather than being limited to reception by sites attached to the K-20 system or the Internet. In satellite based instruction, a mix of live and recorded video is sent to a satellite transponder via an 'uplink'. From the satellite the content is beamed back to earth over a broad reception area (called "footprint") where anyone with a satellite receive dish can become a downlink site. Interaction is most commonly accomplished by telephone though Internet, fax, or print material may also be instructional components.

► **Pre-Recorded Courses**

Some courses are available as pre-recorded media such as video or audiocassettes, or CD-ROM. After listening to or viewing the course materials, students are expected to take action doing assignments, worksheets and/or participatory activities.

Telecourses are complete instructional systems that rely on video for their primary delivery, supplemented by textbooks, study guides, and other materials. Telecourse students work independently, watching the television programs, reading the print materials and doing course assignments. There are few, if any, on-campus meeting times, at the discretion of the instructor.

With such course offerings, faculty members guide students via a variety of communications and instructional techniques including exercises, Web-based research or even labs and fieldwork. Telecourse faculty members usually maintain office hours and are available to assist students by phone, e-mail or in person. In-person seminars may be held for orientation, testing and to complete laboratory exercises.

Commercially produced telecourses are often shown on public broadcasting stations and cable education channels and can be taped off-air. Sometimes colleges establish community viewing sites or tape rental services. Institutions pay for the rights to use these materials, hire faculty, and monitor student outcomes.

Institutions that choose to invest in the production of telecourses themselves (*self-produced*), then own the copyright to the materials. Telecourse quality (and cost) varies widely, from the individual instructor lecturing as a 'talking head', to intricately designed graphic presentations, to complex productions utilizing teams of content experts and sophisticated production personnel.

Computer Based Training (CBT) generally denotes computer based learning packages that do not rely on telecommunicated transmissions for delivery. Most frequently, the student utilizes CBT packages, distributed as CD-ROM, DVD (digital video disk) or software on diskette alone or in computer labs.

► **Internet and Online**

Internet and Online Courses are delivered over the Internet, using computer communications to link faculty and students. Students with a computer and modem can access online course materials from anywhere. A good online course will require students to be actively involved in interactive learning and group participation. When taking an online class, students still utilize other resources such as textbooks, study guides and audio-visual materials. Courses that use additional materials require support mechanisms such as mail order book ordering; community based viewing, or laboratory and test sites to enable students to achieve all of the required course outcomes.

► The Listserv or E-mail classroom

Classes conducted via e-mail allow students to download messages and upload assignments. They often use listservs, which take messages sent to a specific e-mail address and distribute them to all members of a particular group. For e-mail-based classes, the listserv is the virtual classroom. In this way, all the students in that class share comments, questions, and discussions that are sent to the class address. Every student comment or question, every instructor answer or comment is saved for everyone else in the class to read and respond to.

For questions or comments that need to be directed privately, regular e-mail is used. Questions, comments and answers that would normally be made during class are directed to the class listserv so that all can benefit from them. Questions or comments that would normally be asked of an instructor before or after class are directed through private e-mail. Private e-mail is used for feedback from instructor to student, and for submitting homework, quizzes, and tests.

E-mail based classes were among the earliest ways classes were delivered via the Internet, and many still exist today. However, course development and class management (tracking students, file attachment technologies, organizing student interactions) can be cumbersome and limited using only these methods, requiring extra time commitments from both students and teachers.

► Web-based Classes

In distance learning, the World Wide Web (WWW, or Web) is frequently used for class presentation and class materials such as the syllabus, lecture information, illustrations and assignments. When there is sufficient capacity, even video can be delivered over the Internet through video ‘streaming’. Because the Web is such a valuable resource, Web-based classes will take advantage of links to other Internet resources that apply to the course curriculum. Online research is frequently included in the course learning activities. Specialized software also allows for “threaded conferencing,” that visually organizes online class discussions. Conferencing software facilitates online student-to-student and teacher-to-student written discussions. It enables the equivalent of in-class participation on the learner’s schedule. This kind of interaction is generally termed “asynchronous”.

► Course Management Software and Outsourcing

Many institutions have purchased specialized software packages and/or services through which they manage the online, Web-based classroom. In addition to providing a place and format for course content, such software can also administer tests, provide user e-mail, facilitate public discussions, or create and manage small work groups within the class. Depending on the system, teachers may be able to monitor the number of student interactions and track assignments. Some of these systems require students to load proprietary software onto their own computers and therefore require specialized technical support.

Generally speaking, larger institutions have the organizational capacity to manage the support systems (servers, Internet access, student support, faculty training, and course development)

themselves. An alternative for smaller institutions has been to outsource these functions paying fees to companies such as “Real Education” or “Embanet”, for the operational or technical infrastructure needed to manage the online learning environment.

APPENDIX B

PRINCIPLES OF GOOD PRACTICE FOR ELECTRONICALLY OFFERED ACADEMIC DEGREE AND CERTIFICATE PROGRAMS

Preamble

These Principles are the product of a Western Cooperative for Educational Telecommunications project, [Balancing Quality and Access](#): Reducing State Policy Barriers to Electronically Delivered Higher Education Programs.

The three-year project, supported by the U.S. Department of Education's Fund for the Improvement of Postsecondary Education, is designed to foster an interstate environment that encourages the electronic provision of quality higher education programs across state lines. The Principles have been developed by a group representing the Western states' higher education regulating agencies, higher education institutions, and the regional accrediting community.

Recognizing that the context for learning in our society is undergoing profound changes, those charged with developing the Principles have tried not to tie them to or compare them to traditional campus structures. The Principles are also designed to be sufficiently flexible that institutions offering a range of programs--from graduate degrees to certificates--will find them useful.

Several assumptions form the basis for these Principles:

- The electronically offered program is provided by or through an institution that is accredited by a nationally recognized accrediting body.
- The institution's programs holding specialized accreditation meet the same requirements when offered electronically.
- The "institution" may be a traditional higher education institution, a consortium of such institutions, or another type of organization or entity.
- These Principles address programs rather than individual courses.
- It is the institution's responsibility to review educational programs it provides via technology in terms of its own internally applied definitions of these Principles.

CURRICULUM AND INSTRUCTION

Each program of study results in learning outcomes appropriate to the rigor and breadth of the degree or certificate awarded. An electronically offered degree or certificate program is coherent and complete.

The program provides for appropriate real-time or delayed interaction between faculty and students and among students.

Qualified faculty provide appropriate oversight of the program electronically offered.

INSTITUTIONAL CONTEXT AND COMMITMENT

Role and Mission

- The program is consistent with the institution's role and mission.
- Review and approval processes ensure the appropriateness of the technology being used to meet the program's objectives.

Faculty Support

- The program provides faculty support services specifically related to teaching via an electronic system.
- The program provides training for faculty who teach via the use of technology.

Resources for Learning

- The program ensures that appropriate learning resources are available to students.

Students and Student Services

- The program provides students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technological competence and skills, technical equipment requirements, availability of academic support services and financial aid resources, and costs and payment policies.
- Enrolled students have reasonable and adequate access to the range of student services appropriate to support their learning.
- Accepted students have the background, knowledge, and technical skills needed to undertake the program.
- Advertising, recruiting, and admissions materials clearly and accurately represent the program and the services available.

Commitment to Support

- Policies for faculty evaluation include appropriate consideration of teaching and scholarly activities related to electronically offered programs.
- The institution demonstrates a commitment to ongoing support, both financial and technical, and to continuation of the program for a period sufficient to enable students to complete a degree/certificate.

EVALUATION AND ASSESSMENT

The institution evaluates the program's educational effectiveness, including assessments of student learning outcomes, student retention, and student and faculty satisfaction. Students have access to such program evaluation data.

The institution provides for assessment and documentation of student achievement in each course and at completion of the program.